

**ABSTRACT**

An architecture for facilitating wavelength-specific and packet-switched routing comprises a primary metropolitan fiber ring, a primary distribution/aggregation node in the primary metropolitan fiber ring and a local service domain further comprising a secondary aggregation node in communication with the primary distribution/aggregation node. A network to provide local metropolitan switching and routing and broadband local access distribution described in terms of its component layers comprises a distribution/aggregation routing layer that interfaces with a primary fiber metropolitan ring and a local customer primary distribution/aggregation node via transport branches of a mesh architecture, a local distribution and routing layer that routes specific wavelengths and newly assigned wavelengths to and from a customer's premises and a cross-connect layer that handles customer specific wavelength and packet routing via one of fiber, millimeter wave radio and free space optical communications.